

MILKY WAY'S VIOLENT BIRTH DECODED

Relevant for: Geography | Topic: The Earth and the Solar System

The merger of the Milky Way progenitor galaxy and the dwarf galaxy Gaia-Enceladus roughly 10 billion years ago, left, and the current appearance of the Milky Way galaxy, right. | Photo Credit: [Reuters](#)

The Milky Way, home to our sun and billions of other stars, merged with another smaller galaxy in a colossal cosmic collision roughly 10 billion years ago, scientists said on Monday based on data from the Gaia space observatory.

The union of the Milky Way and the so-called dwarf galaxy Gaia-Enceladus increased our galaxy's mass by about a quarter and triggered a period of accelerated star formation lasting about 2 to 4 billion years, the scientists said. "Yes, indeed it was a pivotal moment," said astronomer Carme Gallart of Instituto de Astrofísica de Canarias in Spain, lead author of the research published in *Nature Astronomy*.

Galaxies of all types, including the Milky Way, began to form relatively soon after the Big Bang explosion that marked the beginning of the universe some 13.8 billion years ago, but were generally smaller than those seen today and were forming stars at a rapid rate. Subsequent galactic mergers were instrumental in configuring galaxies existing now.

High-precision measurements of the position, brightness and distance of around a million stars within 6,500 light years of the sun, obtained by the Gaia space telescope, helped pinpoint stars present before the merger and those that formed afterward.

Certain stars with higher content of elements other than hydrogen or helium arose in the Milky Way, they found, and others with lower such content originated in Gaia-Enceladus, owing to its smaller mass. While the merger was dramatic and helped shape the Milky Way, it was not a star-destroying calamity. "This crash was big in cosmic terms, but if it was happening now, we could probably not even notice at a human or solar system level," she said.

"The distances between stars in a galaxy are so huge — a galaxy is basically empty space — that the two galaxies intermix, change their global shape, more star formation may happen in one, and maybe the small one stops forming stars.

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